

# ***Draft Approach for: Transformation of NASA's Approach to Technology Transfer: Making the Most of Innovative Technology Transfer Partnerships***

## **1.0 Introduction/Objectives**

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As NASA strives to achieve the daunting challenges of science and exploration in space, technology transfer can and will play a key role. If the space systems needed to meet NASA's mission are to be developed, the Agency must cooperate with other government agencies and the private sector. Furthermore, other national needs as well as commercial needs can be addressed via such cooperation.

However, in order to be successful in furthering the Agency's goals, the way technology transfer is structured and managed under the Innovative Technology Transfer Program (ITTP) must be transformed. This transformation is expected to result in the following achievements:

- Boost NASA technical strength via infusion of external technology solutions (i.e., "spin-in" of outside technologies into NASA)
- Boost U.S. economic strength via new technology, new products, and increased exports (i.e., "spin-out" of NASA technologies into the private/academic sector)

This white paper presents a brief history of the events driving this change and the approach ITTP is considering to transform technology transfer at NASA. A part of this approach is to invite new and innovative ideas from the broad community to assist in this transformation. Therefore, we plan to release a Request for Information (RFI) in the near future to begin this process.

## **2.0 Background**

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Since early 2003, technology transfer at NASA has experienced significant changes. As part of the FY 2004 budget request, the Administration sought to gain greater value from technology transfer by trying to bring innovations into NASA (i.e., spin-in) rather than simply an exclusive focus on licensing (i.e., spin-out).

### **2.1 NAPA Review of ITTP**

In the summer/fall of 2003, when NASA showed OMB its plan for changing the technology transfer program's internal goals and processes, OMB asked for an external review of the program to: (1) determine the correct balance between spin-in and spin-out; and, (2) obtain advice on how to implement an effective technology transfer program (e.g., benchmarks, best practices). This external review—by the National Academy of Public Administration (NAPA)—began in February 2004, and preliminary results were provided in June. Two of the key findings released in June were the following:

- NASA lacks a comprehensive strategy for identifying technology needs and commercialization opportunities.
- The ITTP network is fragmented, and the roles and responsibilities of its various component organizations are overlapping and/or unclear.

The NAPA study will be completed in October 2004 and its conclusions are expected to track with the preliminary findings described above.

## 2.2 Previous ITTP Structure and Its Limitations

As indicated by the preliminary NAPA findings, NASA's structure for technology transfer (see Exhibit 1) is fragmented, with overlapping and/or unclear roles. ITTP is based at NASA Headquarters and it supports the Mission Directorates, while each field Center has its own technology transfer office. The Robert C. Byrd National Technology Transfer Center (NTTC), based in West Virginia, is independent of the Centers, reporting directly to NASA Headquarters, while six geographically divided Regional Technology Transfer Centers (RTTCs) have a regional focus, reporting to their respective Centers. Furthermore, the RTTCs have a network of affiliates in nearly every state; these affiliates have contact with universities and companies in their respective state/region. In addition, each Center has other outside vendors under contract performing various activities, some of which also have been handled by the Center's RTTC.

**Exhibit 1: Previous Structure for Technology Transfer**

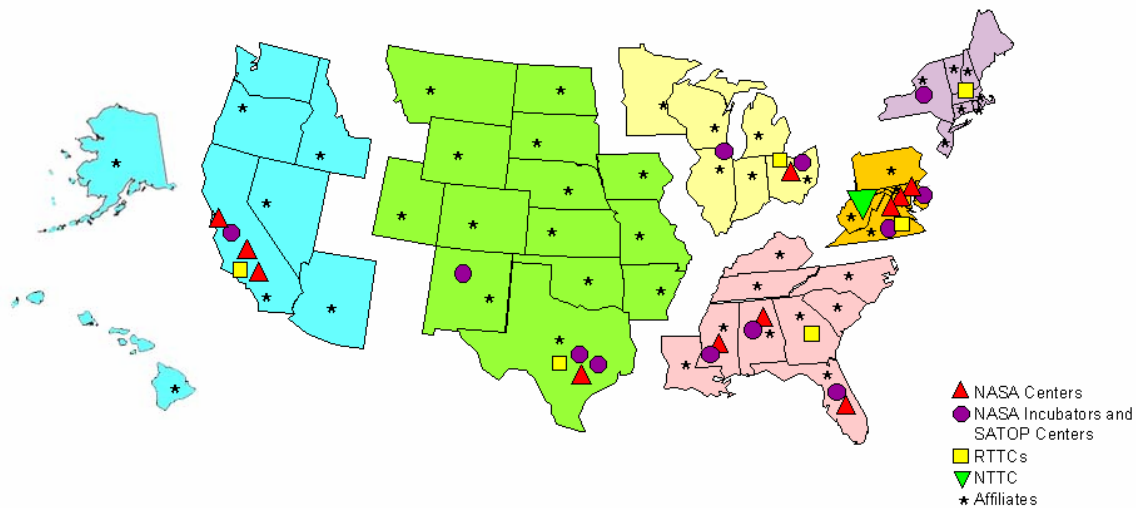
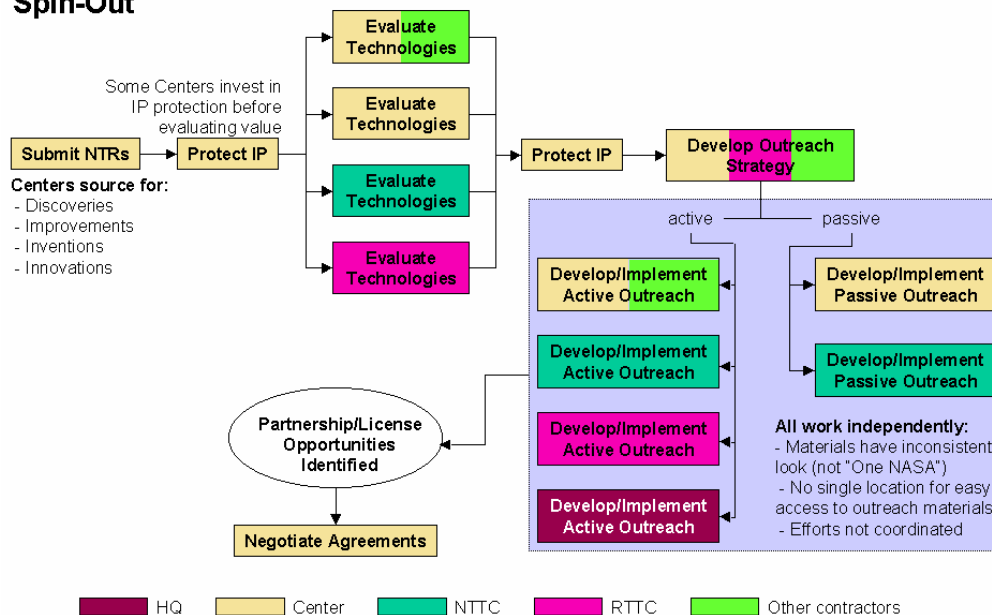


Exhibit 2 illustrates how the structure described above has implemented the five basic elements of technology transfer for spin-out. Those five elements are: (1) identifying/documenting available technologies as well as NASA's technical needs, (2) evaluating/prioritizing these technologies/needs, (3) protecting NASA's intellectual property, (4) performing active outreach to find potential partners, and (5) negotiating partnerships.

These five elements are currently being performed by multiple organizations using different methods. This situation results in much inefficiency in the execution of the program. For example, the close contractual relationship of the RTTCs to a particular center has prevented the presentation of the Agency's unified listing of technologies available for licensing or singular representation of the technology needs of the mission directorates and their programs.

## Exhibit 2: Previous Approach Spin-Out



## 2.3 Looking to the Future

Given the preliminary recommendations made by NAPA and OMB, and the limitations in the existing ITTP structure, NASA will be transforming its approach to technology transfer. In addition to achieving greater spin-in and spin-out success, this transformation also seeks to achieve the following:

- Match some key changes in the U.S. technology transfer environment:
  - Providers of technology transfer services have expanded and improved their capabilities in the past 5 years, making them better able to serve the needs of technology transfer program within NASA.
  - Industry and academia have greater experience with licensing technologies and collaboration, having evolved from a “make” to a “buy” approach to research and development (R&D) and now working with others to create new innovations.
  - NASA’s need to find R&D solutions from nontraditional sources, such as, non-aerospace companies. In working with the “unusual suspects” from other industry sectors, NASA will need even more technology transfer-related support

## 3.0 Transformation of ITTP’s Structure and Approach

The five basic elements of technology transfer at NASA described in section 2.3 still apply. However, ITTP as an organization will be transformed to ensure that these elements are performed effectively. This transformation can be summarized as a more centralized approach to technology transfer.

### 3.1 Transformed Structure

ITTP is considering the following as a possible structure for transformation:

- ***Headquarters (centralized management of tech transfer content):*** Strategy- and content management–related activities will be centrally managed by Headquarters, which will competitively contract out the necessary task efforts:
  - Centers will help in identifying available technologies and technical needs; Headquarters will manage their evaluation and prioritization according to NASA’s vision and goals.
  - Centralizing technology/need evaluation and prioritization will allow NASA to combine similar or closely related techs/needs for greater outreach efficiency.
  - Headquarters will develop partnership strategies that leverage the technologies, needs, and skills across NASA to benefit the four Mission Directorates.
- ***Centers (technical and partnership management):*** The Field Centers will: (1) perform the inherently governmental activities that directly relate to their technical know-how and facilities expertise and (2) establish contracts for those activities that are not inherently governmental:
  - Governmental Activities*
    - Protecting intellectual property developed at the Center
    - Negotiating partnership agreements
  - Contractor Activities*
    - Preparing the content for outreach materials
    - Participating in active outreach efforts as appropriate
- ***Affiliates/National Network (centrally managed):*** Active outreach will be enhanced by the efforts of a “National Network” of affiliates that can be leveraged for outreach, identifying innovations that can meet NASA’s needs (spin-in) as well as realizing commercial benefits of NASA’s investment in technology development. (spin-out).

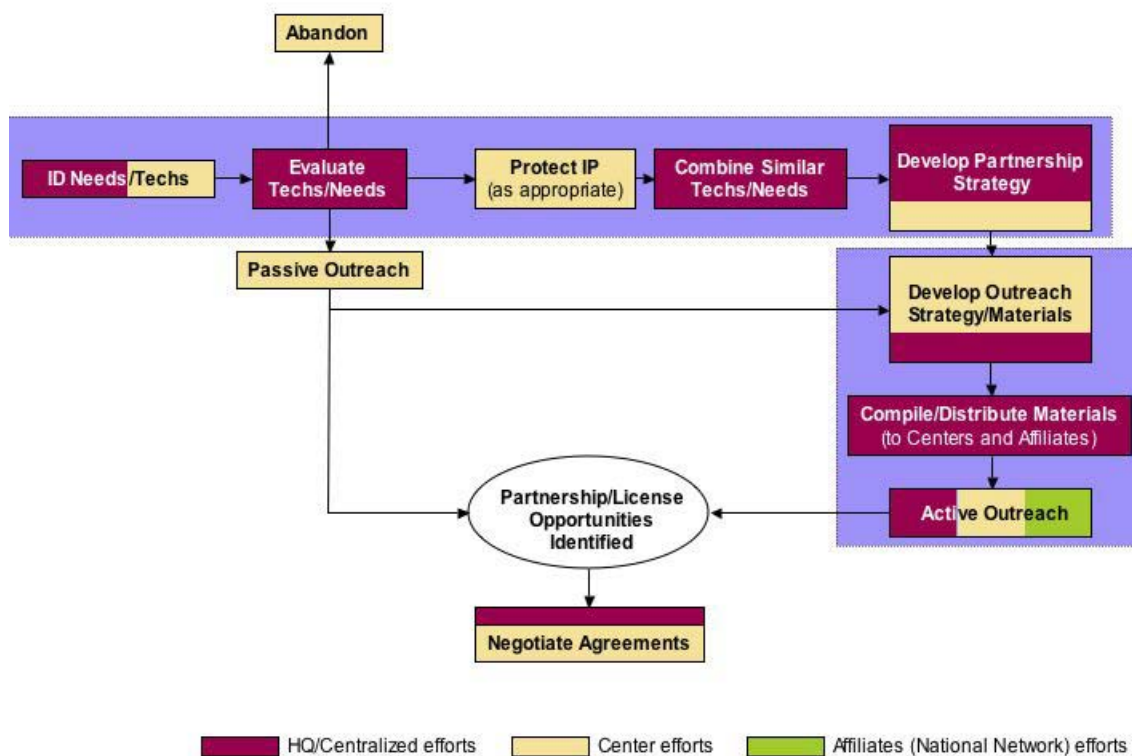
Although it might appear that certain elements of the previous structure are “cut out” of the transformed structure, this is not the case. The NTTC will still have a role. For instance, the NTTC already has established the TechFinder portal, which provides a valuable gateway for national outreach. Similarly, the affiliates that compose the current RTTC network could become part of the centrally managed Affiliate/National Network. And the RTTCs (as well as the NTTC) as independent companies can compete for the contracts out of HQ or the Centers for content management– or outreach-related services.

### **3.2 Transformed Approach**

Exhibit 3 illustrates how the transformed structure will implement the five basic elements of technology transfer for spin-out and spin-in.

### Exhibit 3: Transformed ITTP Approach

## Spin-Out and Spin-In

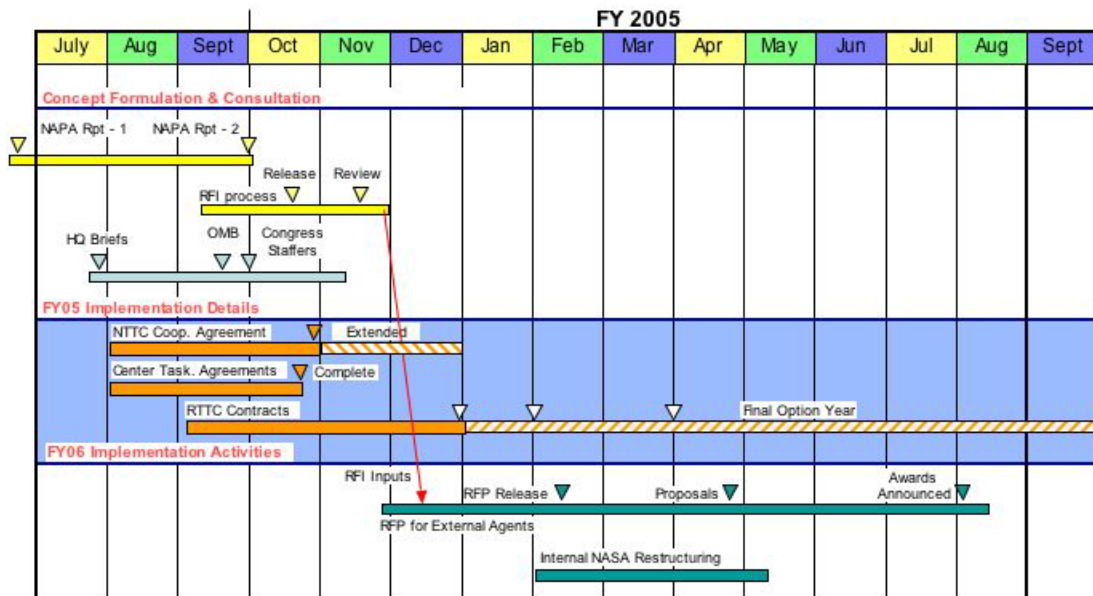


### 3.3 Timing

The transformation of ITTP will begin in FY 2005 and will be completed by the start of FY 2006. The transformed ITTP will be managed by the Exploration Systems Mission Directorate, which has recognized both the inherent value of technology transfer and the need for ITTP's new structure and approach.

It should be noted that 2005 is the final option year of the RTTCs contracts. Therefore, NASA will need to issue a request for proposals (RFP) in FY 2005 to ensure that the ITTP National Network is in place in 2006. The Exploration Systems Mission Directorate plans to utilize the RFI process to attract the best ideas for implementation of the transformed ITTP program as reflected in Exhibit 4.

## Exhibit 4: Timeline



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